

CLAIMS

1. Process for the manufacture of an object, curved in one or more directions, from a package of at least one stacked ply containing polymeric fibres by the deforming thereof at elevated temperature, characterized in that the process comprises imposing a tensile stress on the fibres at a temperature lying between the melting point of the fibres at the imposed tensile stress and 20°C below the melting point, which tensile stress is high enough for the fibres to be drawn.
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- 10 2. Process according to Claim 1 wherein the temperature lies between the melting point of the fibres at the imposed tensile stress and 15°C below the melting point.
3. Process according to Claim 1 or 2 wherein the tensile stress lies between 5% and 90% of the tensile strength of the fibres.
- 15 4. Process according to any of Claims 1-3 wherein the fibres are polyethylene fibres with a tensile strength of at least 2 GPa and a modulus of at least 50 GPa.
5. Process according to any one of Claims 1-4 wherein the fibres in a ply are arranged essentially in parallel.
- 20 6. Process according to Claim 5 wherein the fibres in a ply are at an angle to the fibres in an adjacent ply.
7. Process according to Claim 6 wherein the package contains at least 3 plies and the direction of the fibres is equally distributed over 360°.
8. Process according to any one of Claims 1-7 wherein the plies contain from 0
25 to 50% by mass of a binder for the fibres relative to the total of fibres and binder.
9. Process according to any one of Claims 8 wherein the amount of binder is at the most 25% by mass.
10. Process according to either of Claims 8-9 wherein the binder is a polyethylene
30 film.
11. Process according to any one of Claims 1-10 wherein the object is a helmet or is dome-shaped.
12. Process according to any one of Claims 1-11 wherein the tensile stress is imposed by fastening an outer border of the package and wherein a force is exerted on an area of the plies located within the outer border, which force is
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perpendicular to the plane defined by the outer border.

- 13. Object obtainable by the process of one of the preceding claims.
- 14. Object according to Claim 13 wherein the object is a helmet.
- 15. Wrinkle-free object, curved in one or more directions, comprising at least one
5 ply containing polymeric fibres, which object exhibits in different locations a
different mean fibre diameter, which is the diameter common to the majority of
fibres, with the difference between the greatest and smallest mean value
being at least 7%.